Space Weather Forecast

Issued on Thursday 19 December 2024 at 01:21 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares (Minor-Moderate Radio Blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with frequent Common class flares. There are nine sunspot regions on the Earth-facing disc. A region in the southwest appears to be the most complex sunspot group. A second region slightly further east after showing the most growth in the last 48 hours has begun to slow in any developments and has remained stable. All other spots remain magnetically simple. No Earth-directed Coronal Mass Ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Solar winds remained Elevated with speeds between 500-600km/s, with a slight trend downwards at the end of the period. The Interplanetary Magnetic Field (IMF), remained weak throughout. The north-south component, fluctuated between weakly northwards and southwards. Geomagnetic activity was largely Quiet to Unsettled (kp1-3) with Active intervals (Kp4).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate Solar activity is forecast with a chance of Moderate class flares, increasing gradually through the forecast period.

Solar Wind / Geomagnetic Activity: The CME experienced at Earth during the morning of 17 Dec has largely passed, with Quiet to Unsettled activity expected. Although, solar wind speeds remain elevated with Active intervals likely during Day 1 (19 Dec) and a slight chance of G1/Minor Storm. Several other CMEs that left the Sun in the past few days are forecast as near misses, but cannot be completely ruled out as flanking arrivals at Earth, so there is some uncertainty in the forecast currently.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor solar radiation storms, in response to any notable solar flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	60	60	60
Very Active	R3-R5 (X Class)	No	2	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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